August 12, 1959

Dr. Riley Housewright
Biological Warfare Laboratories
Fort Detrick
Frederick, Maryland

Dear Riley:

Thank you very much for the information and contacts on density measurements. I had in fact talked to Tiselius this spring about the new separation methods they were developing and we had some conversation on possible applications to bacteria. But at the moment I am particularly following up some angles on the density fractionation.

The formal report on our meeting July 8th, has been issued now as a Space Science Board Memorandum and Charlie Phillips should have a copy of this. I can just hope now that NASA and JPL will follow up with a tangible request for a contract. I am sure this will have strong backing from the Academy and if there is anything more that I can do, as you see it, I would appreciate hearing it.

Another committee, part of the Bio-Astronautics Panel for the Armed Forces has also made an almost identical recommendation so I have some hopes that ABMA or ARPA will also be knocking on your door. I don't know how we could manage this problem if your outfit weren't there and interested to carry the ball.

Do you know of any attempt to study survival of bacteria in very hard vacua? This might be quite important in evaluating the transfer of bacteria via missiles. It might be difficult to approximate the vacuum of interplanetary space but I am thinking of the sorts of low pressures that can be attained for electron tubes with a moderate amount of vigor, i.e. pressures in the neighborhood of 10^{-9} atmospheres (actual equilibrium pressure!) We had some discussion on the possibility that at such low pressures many molecules of small or even moderate size might distill out of a bacterium and leave it inviable. We should do some experiments along these lines but I thought that you, if anyone, would know if any work had already been done on the lower range of pressures compatible with the survival of bacteria.

Yours sincerely,

Joshua Lederberg
Professor of Genetics